PATENT COOPERATION TREATY

761

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

GRAHN, Cecilia
Stockholms Patentbyrå Zacco AB
P.O. Box 23101
S-104 35 Stockholm
SUÈDE

Date of mailing (day/month/year)
23 April 2001 (23.04.01)

Applicant's or agent's file reference	IMPORTANT NOTIFICATION
110002301UDO	

International application No.	International filing date (day/month/year)
PCT/SE00/00513	16 March 2000 (16.03.00)

1. The following indications appeared on record concerning:

   [ ] the applicant   [ ] the inventor   [X] the agent   [ ] the common representative

Name and Address	State of Nationality	State of Residence
HINZ, Udo AB Stockholms Patentbyrå, Zacco & Bruhn Box 23101 S-104 35 Stockholm Sweden	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

   [ ] the person   [X] the name   [X] the address   [ ] the nationality   [ ] the residence

Name and Address	State of Nationality	State of Residence
GRAHN, Cecilia Stockholms Patentbyrå Zacco AB P.O. Box 23101 S-104 35 Stockholm Sweden	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

   [X] the receiving Office   [ ] the designated Offices concerned

   [ ] the International Searching Authority   [X] the elected Offices concerned

   [X] the International Preliminary Examining Authority   [ ] other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Leitao
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/306 (March 1994)   003978236

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)	
02 November 2000 (02.11.00)	

International application No.	Applicant's or agent's file reference
PCT/SE00/00513	110002301UDO

International filing date (day/month/year)	Priority date (day/month/year)
16 March 2000 (16.03.00)	16 March 1999 (16.03.99)

Applicant

HENRIKSSON, Hans-Jörgen

1. The designated Office is hereby notified of its election made:

    [X] in the demand filed with the International Preliminary Examining Authority on:

    __11 October 2000 (11.10.00)__

    [ ] in a notice effecting later election filed with the International Bureau on:

    _____

2. The election [X] was

    [ ] was not

    made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Nestor Santesso
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
1100023			
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*	
PCT/SE00/00513	16-03-2000	16-03-1999	

International Patent Classification (IPC) or national classification and IPC7

H04Q 7/32

Applicant

PC CARD INTERNATIONAL PCI AB (publ) et. al.

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1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of   **3**   sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of   sheets.

3. This report contains indications relating to the following items:

   I   ☒   Basis of the report

   II   ☐   Priority

   III   ☐   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   IV   ☐   Lack of unity of invention

   V   ☒   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI   ☐   Certain documents cited

   VII   ☐   Certain defects in the international application

   VIII   ☐   Certain observations on the international application

---

Date of submission of the demand	Date of completion of this report	
11-10-2000	16-07-2001	
Name and mailing address of the IPEA/SE		Authorized officer
Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 00	Telex 17978 PATOREG-S	Jerry Vennerholm / itw Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/⬤0/00513

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[ ] the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

pages _____

[ ] the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement) under article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

pages _____

[ ] the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

pages _____

[ ] the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

pages _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language english which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[X] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in written form

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages _____

[ ] the claims, Nos. _____

[ ] the drawings, sheet/fig _____

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

Form PCT/IPEA/409 (Box I) (January 1998)

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

			YES
Novelty (N)	Claims	1-22	YES
	Claims		NO
Inventive step (IS)	Claims	1-22	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-22	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1   GB, A, 2289555
D2   EP, A1, 0398056

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1-22 is not considered to be anticipated by these documents. None of the documents or any relevant combination of them reveal - application program modules for an external device stored in the CPU memory of a mobile station that is available after a software for mobile station control is stored, whereby the CPU of the interface unit of the mobile station connects the external device to the radio section of the mobile station - as described by these claims.

According to the arguments stated above, the invention claimed in claims 1-22 is novel, considered to involve an inventive step and have industrial applicability.

PCT ●

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

International Application No.	● PCT/ SE0 0 / 0 0 5 1 3
International Filing Date	1 6 -03- 2000
Name of receiving Office and "PCT International Application"	The Swedish Patent Office PCT International Application

Applicant's or agent's file reference
(if desired) (12 characters maximum) 110002301UDO

Box No. I TITLE OF INVENTION

MOBILE STATION WITH A PLURALITY OF INTERFACES

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include the postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no state of residence is indicated below.)*

. PC Card International PCI AB (publ)
Anderstorpsvägen 10, 2tr.
SE-171 54 SOLNA
SWEDEN

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State *(that is, country)* of nationality:	State *(that is, country)* of residence:
SWEDEN	SWEDEN

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no state of residence is indicated below.)*

HENRIKSSON Hans-Jörgen
Gästrikegatan 5
SE-113 62 STOCKHOLM
SWEDEN

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality:	State *(that is, country)* of residence:
SWEDEN	SWEDEN

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent ☐ common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

Udo Hinz
AB STOCKHOLMS PATENTBYRÅ , Zacco & Bruhn
Box 23101, SE-104 35 STOCKHOLM, Sweden

Telephone No.
+46 8 729 95 00

Facsimile No.
+46 8 31 83 15

Teleprinter No.

☐ **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Form PCT/RO/101 (first sheet)　　　　　　　　　　　　　*See Notes to the request form*

Box No.V DESIGNATION O[...]TES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked):*

Regional Patent

☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT

☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgystan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain., FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT

☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the FCT *(if other kind of protection or treatment desired, specify on dotted line)*.................................
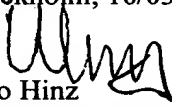
National Patent *(if other kind of protection or treatment desired, specify on dotted line):*

☒	AE	United Arab Emirates		☒	LR	Liberia
☒	AL	Albania		☒	LS	Lesotho
☒	AM	Armenia		☒	LT	Lithuania
☒	AT	Austria		☒	LU	Luxembourg
☒	AU	Australia		☒	LV	Latvia
☒	AZ	Azerbaijan		☒	MA	Morocco
☒	BA	Bosnia and Herzegovina		☒	MD	Republic of Moldova
☒	BB	Barbados		☒	MG	Madagascar
☒	BG	Bulgaria		☒	MK	The former Yugoslav Republic of Macedonia
☒	BR	Brazil		☒	MN	Mongolia
☒	BY	Belarus		☒	MW	Malawi
☒	CA	Canada		☒	MX	Mexico
☒	CH and LI	Switzerland and Liechtenstein		☒	NO	Norway
☒	CN	China		☒	NZ	New Zealand
☒	CR	Costa Rica		☒	PL	Poland
☒	CU	Cuba		☒	PT	Portugal
☒	CZ	Czech Republic		☒	RO	Romania
☒	DE	Germany		☒	RU	Russian Federation
☒	DK	Denmark		☒	SD	Sudan
☒	DM	Dominica		☒	SE	Sweden
☒	EE	Estonia		☒	SG	Singapore
☒	ES	Spain		☒	SI	Slovenia
☒	FI	Finland		☒	SK	Slovakia
☒	GB	United Kingdom		☒	SL	Sierra Leone
☒	GD	Grenada		☒	TJ	Tajikistan
☒	GE	Georgia		☒	TM	Turkmenistan
☒	GH	Ghana		☒	TR	Turkey
☒	GM	Gambia		☒	TT	Trinidad and Tobago
☒	HR	Croatia		☒	TZ	Tanzania
☒	HU	Hungary		☒	UA	Ukraine
☒	ID	Indonesia		☒	UG	Uganda
☒	IL	Israel		☒	US	United States of America
☒	IN	India		☒	UZ	Uzbekistan
☒	IS	Iceland		☒	VN	Viet Nam
☒	JP	Japan		☒	YU	Yugoslavia
☒	KE	Kenya		☒	ZA	South Africa
☒	KG	Kyrgyzstan		☒	ZW	Zimbabwe
☒	KP	Democratic People's Republic of Korea				
☒	KR	Republic of Korea				
☒	KZ	Kazakhstan				
☒	LC	Saint Lucia		☒	DZ	Algeria
☒	LK	Sri Lanka		☐		

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after Issuance of this sheet:

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)*

Form PCT/RO/101 (second sheet)   *See Notes to the request form*

Box No. VI   PRIORITY CLAIM   ☐ Further priority c[...]re indicated in the Supplemental Box.

Filing date of earlier application *(day/month/year)*	Number of earlier application	Where earlier application is:		
		national application: country	regional application: * regional Office	international application: receiving Office
item (1) 16/03/1999	9900954-0	SWEDEN		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): (1)

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII   INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):*	Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority):*
	Date *(day/month/year)* Number Country *(or regional Office)*
ISA /SE	

Box No. VIII   CHECK LIST; LANGUAGE OF FILING

This international application contains the following **number of sheets**:

request	:4 ✓
description (excluding sequence listing part)	:6 ✓
claims	:2 ✓
abstract	:1 ✓
drawings	:1 ✓
sequence listing part of description	:

Total number of sheets: 14

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other *(specify):* List of representatives

Figure of the drawings which should accompany the abstract: Fig. 2	Language of filing of the international application: Swedish

Box No. IX   SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Stockholm, 16/03/2000

[signature]

Udo Hinz
Representative of the applicant

For receiving Office use only   16 -03- 2000

1.	Date of actual receipt of the purported international application:		2. Drawings:
3.	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		☒ received:
4.	Date of timely receipt of the required corrections under PCT Article 11(2):		☐ not received:
5.	International Searching Authority (if two or more are competent): ISA /SE	6. ☐ Transmittal of search copy delayed until search fee is paid	

For International Bureau use only

Date of receipt of the record copy by the International Bureau:	05. MAY 2000	(05. 05. 00)

Form PCT/RO/101 (last sheet)   *See Notes to the request form*

Supplemental box	If the Supplemental Box is not used, this sheet should not be included in the request.

1. *If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular.*

(i) *If more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is country) of residence if no State of residence is indicated below:*

(ii) *If, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant:*

(iii) *If, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicated the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor:*

(iv) *If, in addition to the agent(s) indicated in Box No IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;*

(v) *If, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent addition" or "certificate of addition" or if, in Box No V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application:*

(vi) *If, in Box No VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No VI" and indicated for each additional earlier application the same type of information as required in Box No VI:*

(vii) *If, in Box No VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed.*

2 *If, whit regard to the precautionary designation statement contained in Box No V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.*

3 *If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures of exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.*

CONTINUATION OF BOX IV:

Further representatives:

Agvald-Glas, Gunilla
Bernhult, Lennart
Bjerndell, Per
Brundin; Gabriella
Grahn, Cecilia
Granström, Lars-Eric
Grip, Joakim
Hansson, Hans-Erik
Hansson, Sven A.
Hinz, Udo
Karlsson, Per Tomas
Lennefors, Stefan
Lundström, Maria
Nilsson, Brita
Nordén, J. Åke
Onn, Thorsten
Petré, Urban
Rilton, Kristina
Westerlund, Örjan
Åström, Elsa

Mobilstation med en mångfald av gränssnitt
Mobile station with a plurality of interfaces

Tekniskt område

5   Föreliggande uppfinning hänför sig till ett förfarande för användande av en
mobilstations CPU-minne som gränssnitt för en mångfald för en mobilstation externa
applikationer, samt för en mobilstation per se.

Teknikens ståndpunkt

Mobiltelefonen är idag så gott som var mans egendom. Allteftersom den har blivit
10   tillgänglig för en allmänhet har nya användningsområden för mobiltelefonen tagits i bruk.
Den används bl a för positionering av fordon med GPS (Global Positioning System),
navigering via samma positioneringssystem, sändning av mätvärden från t ex elmätare till en
centraldator, avgivande av personlarm och larm vid stöld av bilar oftast i kombination med
GPS och även vid andra övervakningsuppdrag, som vid avläsning av parametrar för
15   elapparatur i t ex hushåll mm.

Problemet med dagens mobiler med dylika externa uppgifter enligt ovan är att den
externa apparaturen måste anslutas mot mobiltelefonen via ett gränssnitt i form av en
mikroprocessor, som anpassar in- och utdata till mobiltelefonens radiodel. Detta medför en
merkostnad och är ofördelaktigt för kunden och tillverkaren av externa system, som måste
20   anpassa mobiltelefonerna till sina specifika system, såsom GPS.

Det vore bra om kunden själv får bestämma vad dennes mobiltelefon skall användas
till, mer än för ren radiotelefoni, vid inköp av densamma. Kunden kanske även vill kunna
lägga till externa applikationer vid ett senare tillfälle, eller även radera redan befintliga
applikationer. Detta är dock inte möjligt med dagens mobiltelefoner, varför det existerar ett
25   behov av att kunna införa applikationer i mobiltelefonen utan externa gränssnitt för
anpassning till telefonens radiodel.

Den tyska patentansökan DE-A1-44 21 508 anger ett system där en mobiltelefons
SIM-kort (Subscriber Identity Module Card), på tyska benämt "Chip-karte" med IC-krets som
avser kortets aktiva beståndsdel, kan förses med en digital-/analogomvandlare. Ett SIM-kort
30   innefattar en IC-krets med en processor, d v s det är ett aktivt kort. Systemet enligt DE-A1-44
21 508 har således ett extra processorgränssnitt mellan mobiltelefonens CPU och den externa
applikationen, som här är ett system för påkallande av hjälp för förare och passagerare i en
bil.

Den brittiska patentansökningen GB-A-2 289 555 anger en "notebook" dator med minnesenhet som inte använder ledigt minne i CPU:n hos notebook-datorn. En del av notebook-datorns applikations- och ordbehandlingsprogram är lagrat i minnesenheten. Notebook-datorn kommunicerar inte externt mot anordningar utan extern processor som

5 gränssnitt, förutom mot anordningar som inte kräver egen processor, med applikationsprogramvara innefattad i en mobilstations CPU-minne.

Sammanfattning av uppfinningen

Föreliggande uppfinning avser ett förfarande och en mobilstation för användande av en mobilstations CPU-minne som gränssnitt för en mångfald för mobilstationen externa

10 applikationer enligt bilagda självständiga patentkrav samt ytterligare utföringsformer enligt bilagda osjälvständiga krav.

Ett ändamål med föreliggande uppfinning är att ange en mobilstation som har kundanpassats för kommunikation mot för mobilstationen externa enheter direkt från CPU:n, utan att använda en extern CPU som gränssnitt för kommunikationen.

15 Uppfinningen anger speciellt ett förfarande för användande av en mobilstations CPU-minne som gränssnitt för en mångfald för mobilstationen externa applikationer. Programoduler för nämnda externa applikationer lagras i den del av en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens konventionella funktioner har lagrats. Mobilstationens CPU utför således de funktioner som ansluter externa

20 organ mot mobilstationens radiodel och ersätter därmed en konventionell extern CPU som gränssnitt mellan externa organ och mobilstationen.

I en utföringsform av uppfinningen ansluts mobilstationens in- och utportar direkt mot det externa organets in- och utportar, via kabel eller trådlöst, varvid mobilstationen inte låses kontinuerligt mot ett externt organ.

25 I en annan utföringsform har CPU:n ett gränssnitt mot varje externt organ med dess applikation.

Ännu en utföringsform av uppfinningen innefattar att ett av de externa organen är ett positionsbesbestämningsorgan för positionsbestämning av mobilstationen.

En annan utföringsform innefattar att ett av de externa organen är ett mätteknikorgan

30 för mätning av minst en mätbar parameter.

Ännu en annan utföringsform innefattar att ett av de externa organen är ett navigeringsorgan för navigering av fordon eller människa.

Vidare innefattar uppfinningen i en utföringsform att ett av de externa organen är ett alarm för alarmering av något tillstånd som kräver att alarm avges.

En vidare utföringsform innefattar att ett av de externa organen är ett övervakningsorgan för övervakning av t ex maskiner eller en maskinpark.

Ytterligare en utföringsform innefattar att de externa organen är kundspecifika med kundspecifika applikationsprogrammoduler, varvid de har bestämts av en användare av mobiltelefonen och programmerats in vid beställning av mobilstationen, och varvid mobilstationen åstadkoms skräddarsydd enligt användarens behov. Vidare kan de externa organen raderas och ersättas med nya kundspecifika applikationsprogrammoduler genom omprogrammering av de lediga i en utföringsform av uppfinningen.

Vidare anger föreliggande uppfinning en mobilstation med ett eget CPU-minne som gränssnitt mot en mångfald för mobilstationen externa applikationer. Mobilstationen innefattar då:

programmoduler i CPU-minnet för nämnda externa applikationer, vilka lagras i den del av en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens konventionella funktioner har lagrats; och

att CPU:n utför de funktioner som ansluter externa organ mot mobilstationens radiodel och därmed ersätter en konventionell extern CPU som gränssnitt mellan externa organ och mobilstationen.

Ytterligare kan mobilstationen enligt föreliggande uppfinning utöva de utföringsformer som anges i förfarandet enligt ovan.

Kortfattad beskrivning av ritningen

Fortsättningsvis hänvisas till bilagda ritningsfigurer med beskrivningstext för en bättre förståelse av uppfinningen och dess utföringsformer, varvid:

Fig. 1 schematiskt illustrerar en utföringsform av förut känd teknik vad beträffar ett exempel med GPS-positiponering; och

Fig. 2 schematiskt illustrerar en utföringsform enligt föreliggande uppfinning med exemplet i Fig. 1.

Föredragna utföringsformer av den beskrivna uppfinningen

Uppfinningen enligt föreliggande beskrivning avser att lösa problem relaterade till gränssnitt för användandet av externa organ, såsom GPS-anordningar, alarmanordningar, övervakningsanordningar, mätteknikanordningar etc., som använder sig av en mobiltelefon för att meddela sig mot en central el dylikt. I fig. 1 illustreras ett förut känt system för positionering av t ex ett fordon, djur eller person. Fig. 1 illustrerar schematiskt en utföringsform av förut känd teknik vad beträffar ett exempel med GPS-positiponering. Systemet består av en mobilstation (MS) 10 som meddelar positionen för bäraren av systemet

via positionsinformation som erhålles genom en GPS-satellitmottagare 14 med
mottagarantenn 16.

För att kunna använda mobilstationen 10 för radiomeddelanden, via t ex GSM, om
positionen för en bärare av densamma, måste GPS-mottagaren ha ett gränssnitt i form av en
5   mikroprocessor 12 mot MS 10 radiodel så att data från GPS sänds korrekt över GSM.

Fig. 2 illustrerar schematiskt en utföringsform enligt föreliggande uppfinning med
GPS-exemplet i Fig. 1.

Med hänvisning till fig. 2 enligt föreliggande uppfinning, löses problemet med en
extra mikroprocessor 12 mellan ett externt organ 14 och MS 10, med insikten att MS 10 CPU
10   (Central Processor Unit, central processorenhet) bör vara mest lämpad att användas som
gränssnitt mellan externa organ 14 och MS 10 radiodel 20. Problemet löses genom att utnyttja
CPUN:s interna minne om ca 1MB av vilket ca 700 KB används för MS 10 telefoni- och/eller
datadel. Uppfinningen per se är inte begränsad till storlek vad beträffar minnesutrymmet.

De flesta externa applikationer enligt ovan behöver omkring 50 KB minne för att
15   kunna tjäna som applikationsprogrammoduler, d v s datorprogram som agerar gränssnitt
mellam MS 10 radiodel 20 och externa organ 14.

Teoretiskt ger 300 KB plats för 6 applikationsprogrammoduler.

Vid tillverkning av MS 10 enligt föreliggande uppfinning kan en IC-krets 18 från t
ex företaget Commquest ® användas. Kretsen består av ett antal moduler, här sex stycken,
20   varvid en modul utgör en CPU som kan programmeras för mobiltelefoni. Vidare utgör en
modul ett I/O-gränssnitt för kommunikation med MS 10 omvärld. Ytterligare en
applikationsprogrammodul betecknad med VOC (VOice Coder) utgör mobilens röstkodare.
En modul är betecknad A/D och utgör en analog-/digitalomvandlare.

Fig. 2 visar även två extra moduler utan beteckning, vilka kan användas som
25   applikationsprogrammoduler för externa organ. Den ena modulen är här, schematiskt visat,
ansluten till MS 10 radiodel 20 för rapportering till en central av MS 10 position.

Enligt föreliggande uppfinning löses således problemet med en extra mikroprocessor
12 mellan MS 10 radiodel 20 och externa organ 14 så att mobilstationens in- och utportar kan
anslutas direkt mot det externa organets 14 in- och utportar (ej visade). På samma sätt kan MS
30   10 CPU ha ett gränssnitt mot varje annat externt organ med dess applikation så länge ledigt
minnesutrymme i MS 10 medger detta.

Ytterligare så utgör några föredragna utföringsformer av uppfinningen, att ett av de
externa organen är ett positionsbesbestämningsorgan 14 för positionsbestämning av
mobilstationen 10, mätteknikorgan för mätning av minst en mätbar parameter,

navigeringsorgan för navigering av fordon eller människa, alarm för avgivande av alarm för något tillstånd som kräver att alarm avges, övervakningsorgan för övervakning etc. Mätteknikorganet kan t ex utgöras av en avläsare av elförbrukningen i ett hushåll, varvid MS 10 sänder avläsningen till en eldistributör. Alarmet kan vara ett inbrottsalarm med

5   rörelsedetektor som via MS 10 vid inbrott sänder till en alarmcentral, t ex polisen. Övervakningsorganet kan t ex övervaka funktionen av en maskin eller en maskinpark för meddelande av olika parameterinställningar hos dessa samt för vidarebefordran av parametrarna till en driftcentral via MS 10. Enligt samma förfarande kan navigeringsorganet användas för att på en display ange kursinformation för ett fordon.

10   Föreliggande uppfinning är inte på något sätt begränsad till här angivna applikationer, utan en mångfald andra applikationer som kräver sändning via MS 10 är möjliga.

De externa organen 14 har härvid åstadkommits kundspecifika med kundspecifika applikationsprogrammoduler, varvid de företrädesvis har bestämts och beställts av en

15   användare av MS 10 och således programmerats in vid beställning av mobilstationen. MS 10 har på så sätt åstadkommits skräddarsydd enligt användarens behov. De externa organens applikationer kan även raderas i CPU:n, och ersättas med nya kundspecifika applikationsprogrammoduler genom programmering av de lediga eller raderade.

Mobilstation MS 10 enligt föreliggande uppfinning med eget CPU-minne som

20   gränssnitt 18 mot en mångfald för mobilstationen externa applikationer innefattar förutom sedvanliga för MS 10 telefoni- och/eller datafunktioner även:

Applikationsprogrammoduler 18 i CPU-minnet för nämnda externa applikationer, vilka lagras i den del av en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens 10 konventionella funktioner har lagrats; och

25   att CPU:n utför de funktioner som ansluter externa organ 14 mot mobilstationens radiodel 20 och därmed ersätter en konventionell extern CPU 12 som gränssnitt 18 mellan externa organ 14 och mobilstationen 10.

CPU:n är i en utföringsform en IC-krets 18 med ett fast antal moduler för externa applikationer innefattade.

30   Uppfinningen medger även att mobilen ansluts med sladd eller trådlöst via gränssnittet 18 mot olika externa organ efter behov för mätning, alarm, övervakning, navigering, positionering etc, allt efter applikationsrogrammoduler, vilket innebär att MS 10 inte behöver låsas kontinuerligt mot ett externt organ. På så vis blir MS 10 användningsområde mycket mångsidigt och flexibelt. En användare kan då använda MS 10

som konventionell mobiltelefon, elavläsningsmätare, navigeringshjälp etc, utan att som

nämnts låsa dess användning.

Föreliggande uppfinning har här beskrivits genom föredragna utföringsformer och

exempel, men är för den skull inte begränsad till dessa, utan det är bilagda patentkravs

5 avfattning som anger ytterligare utföringsformer för en fackman inom teknikområdet.

Patentkrav

1. Förfarande för användande av en mobilstations (10) CPU-minne som gränssnitt (18) för en mångfald för mobilstationen (10) externa applikationer (14), k ä n n e t e c k n a t av att applikationsprogrammoduler för nämnda externa applikationer (14) lagras i den del av

5 en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens konventionella funktioner har lagrats, varvid mobilstationens CPU utför de funktioner som ansluter externa organ (14) mot mobilstationens (10) radiodel (20) och därmed ersätter en konventionell extern CPU (12) som gränssnitt (18) mellan externa organ (14) och mobilstationen (10).

10 2. Förfarande enligt krav 1, k ä n n e t e c k n a t av att mobilstationens (10) in- och utportar (I/O) ansluts direkt mot det externa organets (14) in- och utportar, via kabel eller trådlöst, varvid mobilstationen (10) inte låses kontinuerligt mot ett externt organ (14).

3. Förfarande enligt krav 1 och 2, k ä n n e t e c k n a t av att CPU:n har ett gränssnitt mot varje externt organ med dess applikation.

15 4. Förfarande enligt krav 1-3, k ä n n e t e c k n a t av att ett av de externa organen (14) är ett positionsbesbestämningsorgan för positionsbestämning av mobilstationen (10).

5. Förfarande enligt krav 1-4, k ä n n e t e c k n a t av att ett av de externa organen är ett mätteknikorgan för mätning av minst en mätbar parameter.

6. Förfarande enligt krav 1-5, k ä n n e t e c k n a t av att ett av de externa organen

20 är ett navigeringsorgan för navigering av fordon eller människa.

7. Förfarande enligt krav 1-6, k ä n n e t e c k n a t av att ett av de externa organen är ett alarm för alarmering av något tillstånd som kräver att alarm avges.

8. Förfarande enligt krav 1-7, k ä n n e t e c k n a t av att ett av de externa organen är ett övervakningsorgan för övervakning av tillstånd.

25 9. Förfarande enligt något av föregående krav, k ä n n e t e c k n a t av att de externa organen (14) är kundspecifika med kundspecifika applikationsprogrammoduler, varvid de har bestämts av en användare och programmerats in vid beställning av mobilstationen, och varvid mobilstationen (10) åstadkoms skräddarsydd enligt användarens behov.

30 10. Förfarande enligt krav 9, k ä n n e t e c k n a t av att externa organs (14) applikationsprogrammoduler kan raderas och ersättas med nya kundspecifika applikationsprogrammoduler genom omprogrammering av de lediga.

11. Förfarande enligt krav 1-10, k ä n n e t e c k n a t av att CPU:n är en IC-krets (18) med ett fast antal moduler för externa applikationer innefattade.

12. Mobilstation (10) med eget CPU-minne som gränssnitt (18) mot en mångfald för mobilstationen (10) externa applikationer, k ä n n e t e c k n a d av att den innefattar:

applikationsprogrammoduler i CPU-minnet för nämnda externa applikationer, vilka lagras i den del av en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens (10) konventionella funktioner har lagrats; och

att CPU:n utför de funktioner som ansluter externa organ (14) mot mobilstationens (10) radiodel (20) och därmed ersätter en konventionell extern CPU (12) som gränssnitt (18) mellan externa organ (14) och mobilstationen (10).

13. Mobilstation enligt krav 12, k ä n n e t e c k n a d av att mobilstationens (10) in- och utportar (I/O) ansluts direkt mot det externa organets (14) in- och utportar, via kabel eller trådlöst, varvid mobilstationen (10) inte låses kontinuerligt mot ett externt organ (14).

14. Mobilstation enligt krav 12 och 13, k ä n n e t e c k n a d av att CPU:n har ett gränssnitt (18) mot varje externt organ (14) med dess applikation.

15. Mobilstation enligt krav 12-14, k ä n n e t e c k n a d av att ett av de externa organen är ett positionsbesbestämningsorgan för positionsbestämning av mobilstationen.

16. Mobilstation enligt krav 12-15, k ä n n e t e c k n a d av att ett av de externa organen är ett mätteknikorgan för mätning av minst en mätbar parameter.

17. Mobilstation enligt krav 12-16, k ä n n e t e c k n a d av att ett av de externa organen är ett navigeringsorgan för navigering av fordon eller människa.

18. Mobilstation enligt krav 12-17, k ä n n e t e c k n a d av att ett av de externa organen är ett alarm för alarmering av något tillstånd som kräver att alarm avges.

19. Mobilstation enligt krav 11-17, k ä n n e t e c k n a d av att ett av de externa organen är ett övervakningsorgan för övervakning av tillstånd.

20. Mobilstation enligt krav 12-19, k ä n n e t e c k n a d av att de externa organen (14) är kundspecifika med kundspecifika applikationsprogrammoduler, varvid de har bestämts av en användare och programmerats in vid beställning av mobilstationen (10), och varvid mobilstationen åstadkoms skräddarsydd enligt användarens behov.

21. Mobilstation enligt krav 20, k ä n n e t e c k n a d av att externa organ (14) kan raderas och ersättas med nya kundspecifika applikationsprogrammoduler genom omprogrammering av de lediga.

22. Mobilstation enligt krav 12-21, k ä n n e t e c k n a d av att CPU:n är en IC-krets (18) med ett fast antal moduler för externa applikationer innefattade.

Sammandrag

Uppfinningen avser ett förfarande och en mobilstation (10), där en mobilstations CPU-minne utgör gränssnitt (18) för en mångfald för mobilstationen (10) externa applikationer. Applikationsprogrammoduler för nämnda externa applikationer lagras i den del

5 av en mobilstations CPU-minne som är ledigt efter det att programvaran som styr mobilstationens (10) konventionella funktioner har lagrats. Mobilstationens CPU utför därefter de funktioner som ansluter externa organ (14) mot mobilstationens radiodel (20) och därmed ersätter en konventionell extern CPU (12) som gränssnitt mellan externa organ (14) och mobilstationen (10).

10 (Fig. 2)

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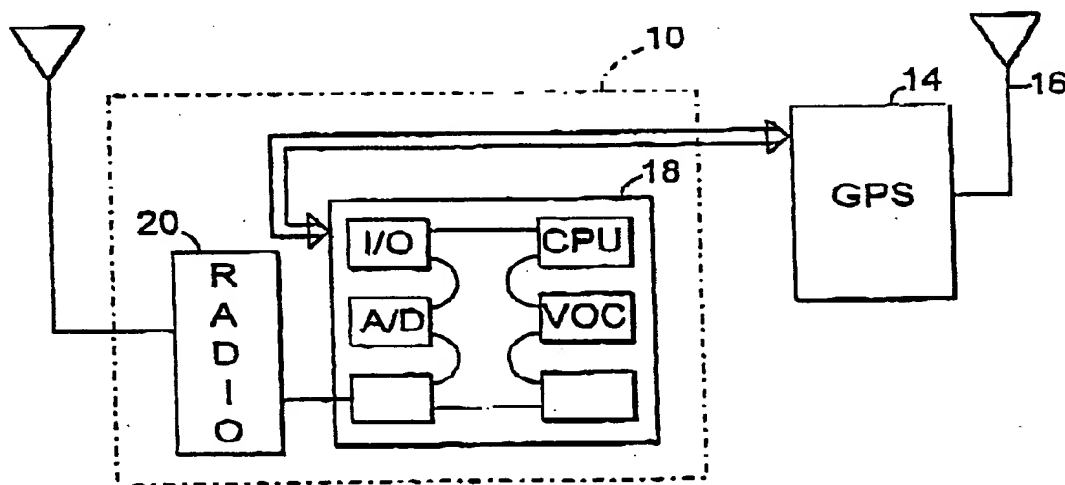
(57) Abstract

The invention relates to a method and a mobile station (10), in which the CPU memory of the mobile station provides interfaces (18) for a plurality of applications that are external to the mobile station (10). Applications program modules for the said external applications are stored in that part of the CPU memory of a mobile station which is available after that the software than controls the conventional functions of the mobile station (10) has been stored. The CPU of the mobile station thereafter performs the functions that connect external devices (14) to the radio part (20) of the mobile station and in this way replaces a conventional external CPU (12) as interface between external devices (14) and the mobile station (10).

Mobile station with a plurality of interfaces

Technical field

The present invention concerns a method for using the CPU-memory of a mobile
station as interfaces for a plurality of applications that are external to the mobile station and
for the mobile station *per se*.

Prior art

Practically everyone today owns a mobile telephone. As such telephones have
become available for the general public more and more applications have been established for
them. Among other things, they are used for determining the position of vehicles using GPS
(Global Positioning System), navigation using the said positioning system, sending of
measured values from, for example, an electrical meter to a central computer, generation of a
personal alarm and alarm for the theft of vehicles, often in combination with GPS, and for
other monitoring tasks, such as the reading of parameters for electrical equipment in, for
example, domiciles, etc.

The problem with current mobile telephones when used for such external tasks is that
the external equipment must be connected to the mobile telephone via an interface in the form
of a microprocessor, which adapts input and output data to the radio section of the mobile
telephone. This involves additional cost and is disadvantageous for the customer and the
manufacturers of the external systems, who must adapt the mobile telephones to their specific
systems, such as GPS.

It would be an advantage if the customers themselves could determine what their
mobile telephones are to be used for, in addition to pure radio-telephony, when purchasing
them. The customer may even desire to add external applications at a later date, or even
remove existing applications. This is, however, not possible with current mobile telephones,
which is why there exists a need to be able to introduce applications into mobile telephones
without external interfaces for adaptation to the radio section of the telephone.

The German patent application DE-A1-44 21 508 specifies a system in which the
SIM-card (Subscriber Identity Module Card) of a telephone, called in German "Chip-karte"
with an IC-circuit that denotes the active components of the card, can be equipped with a
digital-analogue converter. A SIM-card includes an IC-circuit with a processor, that is, it is an
active card. The system according to DE-A1-44 21 508, has thus an extra processor interface
between the CPU of the mobile telephone and the external application, which in this case is a
system for requesting help for the driver and passengers in a car.

The British patent application GB-A-2 289 555 specifies a "notebook" computer with a memory unit that does not use the free memory in the CPU of the notebook. Part of the application and word processor programs of the notebook computer are stored in the memory unit. The notebook computer does not communicate externally with devices that lack an external processor as an interface, with the exception of devices that do not require their own processor, with applications software included in the CPU memory of a mobile station.

Summary of the invention

The present invention relates to a method and a mobile station for the use of the CPU memory of a mobile station as interface for a plurality of applications that are external to the mobile station according to the attached independent claims and further embodiments according to the attached dependent claims.

One intention of the present invention is to specify a mobile station that has been customized for communication with units that are external to the mobile station directly from the CPU, without using an external CPU as interface for the communication.

In particular, the invention specifies a method for using the CPU memory of a mobile station as interface for a plurality of applications that are external to the mobile station. Program modules for the said external applications are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored. The CPU of the mobile station thus performs those functions that connect external devices to the radio section of the mobile station and thus replaces a conventional external CPU as interface between external devices and the mobile station.

In one embodiment of the invention the input- and output ports of the mobile station are connected directly to the input- and output ports of the external device, via cable or in a wireless manner, whereby the mobile station is not continuously locked into an external device.

In another embodiment the CPU has an interface to each external device and its application.

A further embodiment of the invention includes the case in which one of the external devices is a position-determining device, for determining the position of the mobile station.

Another embodiment includes the case in which one of the external devices is a measuring device for measurement of at least one measurable parameter.

A further embodiment includes the case in which one of the external devices is a navigation device for navigation of a vehicle or person.

Furthermore, the invention in one embodiment includes the case in which one of the external organs is an alarm for generating an alarm concerning a condition that requires an alarm.

A further embodiment includes the case in which one of the external devices is a
5   monitoring device for, for example, machines or a machine park.

A further embodiment includes the case in which the external organs are customized with customized applications program modules, whereby they have been determined by the user of a mobile telephone and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station is achieved according to the needs of the customer.
10   Furthermore, the applications program modules of the external devices can be erased and replaced by new applications program modules that are specific for the customer by reprogramming of free modules in an embodiment of the invention.

Furthermore, the present invention specifies a mobile station with its own CPU memory as interface to a plurality of applications that are external to the mobile station. The
15   mobile station in this case includes:

program modules in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored; and

that the CPU performs those functions that connect external devices to the radio
20   section of the mobile station and thus replaces a conventional external CPU as interface between external devices and the mobile station.

Further, the mobile station can, according to the present invention, perform those embodiments that are specified in the method described above.

Brief description of the drawing

25   Henceforth reference is had to the attached drawings and the explanatory text in order to obtain a better understanding of the invention and its embodiments, whereby:

Fig. 1 illustrates schematically an embodiment of previously known technology concerning an example using GPS positioning; and

Fig. 2 illustrates schematically an embodiment according to the present invention
30   with the example shown in Fig. 1.

Preferred embodiments of the described invention

The invention according to the present description is intended to solve the problems related to interfaces for the use of external devices, such as GPS devices, alarm devices, monitoring devices, measurement devices, etc., that make use of a mobile telephone in order

to send messages to a central or similar. A previously known system is illustrated in Fig. 1 for the positioning of, for example, a vehicle, animal or person. Fig. 1 illustrates schematically an embodiment of previously known technology concerning an example using GPS positioning. The system consists of a mobile station (MS) 10 that sends messages concerning the position

5   of the bearer of the system using position information that is obtained through a GPS satellite receiver 14 with a receiving aerial 16.

In order to be able to use the mobile station 10 for radio messages, via, for example, GSM, about the position of a bearer of the same, the GPS receiver must have an interface in the form of a microprocessor 12 to the radio section of the MS 10, so that data from GPS are

10   correctly transmitted over GSM.

Fig. 2 illustrates schematically an embodiment according to the present invention of the GSM example shown in Fig. 1.

With reference to Fig. 2 according to the present invention, the problem concerning an extra microprocessor 12 between an external device 14 and the MS 10 is solved using the

15   insight that the CPU (Central Processor Unit) of MS 10 should be most suitable to be used as interface between external devices 14 and the radio section 20 of MS 10. The problem is solved by using the internal memory of about 1 MB of the CPU, approximately 700 KB of which are used for the telephony and/or data part of MS 10. The invention in itself is not limited concerning the size of the memory.

20   Most external applications according to the above require around 50 KB of memory in order to be able to serve as applications program modules, that is, computer programs that function as interfaces between the radio section 20 of MS 10 and external devices 14.

In theory, 300 KB provides space for six applications program modules.

During manufacture of MS 10 according to the present invention, an IC circuit 18

25   from, for example, the company Commquest ® be used. The circuit consists of a number of modules, in this case six, whereby one module provides a CPU that can be programmed for mobile telephony. Further, one module provides an I/O interface for communication with the surroundings of MS 10. A further applications program module denoted VOC (VOice Coder) provides the voice coder of the mobile telephone. One module is denoted A/D and provides

30   an analogue/digital converter.

Fig. 2 also shows two extra modules without description, which can be used as applications program modules for external devices. The one module here is, schematically shown, connected to the radio part 20 of MS 10 in order to report the position of MS 10 to a central.

According to the present invention, the problem concerning an extra microprocessor 12 between the radio section 20 of MS 10 and external devices 14 is solved such that the input- and output ports of the mobile station can be connected directly to the input- and output ports (not shown) of the device 14. In the same way can the CPU of MS 10 have an interface
5   to each external device and its application as long as available memory capacity in MS 10 allows this.

Furthermore, certain preferred embodiments of the present invention consist of that one of the external devices is a position-determining device 14 in order to determine the position of the mobile station 10, measurement devices for measurement of at least one
10   measurable parameter, navigation devices for the navigation of a vehicle or a person, alarms for generating an alarm concerning a condition that requires an alarm, monitoring devices for monitoring, etc. For example, the measuring device may consist of a reader of the electricity consumption of a domicile, whereby MS 10 transmits the reading to an electrical distributor. The alarm may be an intrusion alarm with motion detector that transmits via MS 10 to an
15   alarm central, for example, the police, in the event of an intrusion. The monitoring device may, for example, monitor the functioning of a machine or machine park in order to send messages concerning the settings of various parameters of these, and for further transmission of the parameters to a operations centre via MS 10. According to the same method, the navigation device can be used in order to specify the course information of a vehicle on a
20   display.

The present invention is not in any way limited by the specified applications, rather a plurality of other applications that require transmission by MS 10 are possible.

The external devices 14 have hereby been achieved as specific for a customer, with customized applications, whereby they have preferably been determined and ordered by a user
25   of MS 10, and thus programmed in during ordering of the mobile station. Tailoring of MS 10 has in this way been achieved according to the needs of the user. The applications of the external devices can even be deleted in the CPU, and replaced by new customer-specific applications program modules by programming of the available or deleted [space].

The mobile station MS 10 according to the present invention with its own CPU
30   memory as interface 18 for a plurality of applications that are external to the mobile station includes in addition to telephony and/or computer functions that are customary for MS 10 also:

Application program modules 18 in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is

available after that the software that controls the conventional functions of the mobile stations has been stored; and

that the CPU performs those function that connect external devices 14 to the radio section 20 of the mobile station, and thus replaces the conventional external CPU 12 as interface 18 between the external device 14 and the mobile station 10.

The CPU in one embodiment is an IC circuit 18 that includes a fixed number of modules for external applications.

The invention also allows that the mobile telephone is connected by wire or in a wireless manner via interface 18 to different external devices as required for measurement, alarm, monitoring, navigation, positioning, etc., depending on the applications program modules, which means that MS 10 does not need to be continuously locked to one external device. In this way, the area of application of MS 10 becomes very versatile and flexible. As previously discussed, a user can then use MS 10 as a mobile telephone, electrical meter reader, navigation aid, etc., without locking its use.

The present invention has been described by the use of preferred embodiments and examples, but is not limited to these because of this. It is rather the attached claims that specify further embodiments for one skilled in this technical field.

Claims

1. Method for using the CPU memory of a mobile station (10) as interface (18) for a plurality of applications (14) that are external to the mobile station (10), c h a r a c t e r i z e d in that applications program modules for the said external applications (14) are stored in that part of the CPU memory of a mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored, whereby the CPU of the mobile station performs those functions that connect external devices (14) to the radio section (20) of the mobile station (10) and in this way replaces a conventional external CPU (12) as interface (18) between external devices (14) and the mobile station (10).

2. Method according to claim 1, c h a r a c t e r i z e d in that the input- and output (I/O) ports of the mobile station (10) are connected directly to the input- and output ports of the external device (14) by cables or in a wireless manner, whereby the mobile station (10) is not continuously locked to an external device (14).

3. Method according to claims 1 and 2, c h a r a c t e r i z e d in that the CPU has an interface to each external device and its application.

4. Method according to claims 1-3, c h a r a c t e r i z e d in that one of the external devices (14) is a position-determining device for determining the position of the mobile station (10).

5. Method according to claims 1-4, c h a r a c t e r i z e d in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

6. Method according to claims 1-5, c h a r a c t e r i z e d in that one of the external devices is a navigation device for navigation of a vehicle or person.

7. Method according to claims 1-6, c h a r a c t e r i z e d in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

8. Method according to claims 1-7, c h a r a c t e r i z e d in that one of the external devices is a monitoring device for monitoring conditions.

9. Method according to any of the preceding claims, c h a r a c t e r i z e d in that the external devices (14) are specific to the customer with customized applications program modules, whereby they have been determined by a user and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station (10) is achieved according to the requirements of the user.

10. Method according to claim 9, c h a r a c t e r i z e d in that the applications program modules of the external devices (14) can be erased and replaced by new applications

program modules specific for the customer by reprogramming free modules.

11. Method according to claims 1-10, c h a r a c t e r i z e d in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

12. Mobile station (10) with its own CPU memory as interface (18) to a plurality of applications that are external to the mobile station (10), c h a r a c t e r i z e d in that it includes:

applications program modules in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station (10) has been stored; and

that the CPU performs those functions that connect external devices (14) to the radio section (20) of the mobile station (10) and in this way replaces a conventional external CPU (12) as interface (18) between external devices (14) and the mobile station (10).

13. Mobile station according to claim 12, c h a r a c t e r i z e d in that the input- and output (I/O) ports of the mobile station (10) are connected directly to the input- and output ports of the external device (14) by cables or in a wireless manner, whereby the mobile station (10) is not continuously locked to an external device (14).

14. Mobile station according to claims 12 and 13, c h a r a c t e r i z e d in that the CPU has an interface (18) to each external device (14) and its application.

15. Mobile station according to claims 12-14, c h a r a c t e r i z e d in that one of the external devices is a position-determining device for determining the position of the mobile station.

16. Mobile station according to claims 12-15, c h a r a c t e r i z e d in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

17. Mobile station according to claims 12-16, c h a r a c t e r i z e d in that one of the external devices is a navigation device for navigation of a vehicle or person.

18. Mobile station according to claims 12-17, c h a r a c t e r i z e d in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

19. Mobile station according to claims 12-18, c h a r a c t e r i z e d in that one of the external devices is a monitoring device for monitoring conditions.

20. Mobile station according to claims 12-19, c h a r a c t e r i z e d in that the external devices (14) are specific to the customer with customized applications program modules that are specific to the customer, whereby they have been determined by a user and

programmed in during ordering of the mobile station (10), and whereby tailoring of the mobile station is achieved according to the requirements of the user.

21. Mobile station according to claim 20, c h a r a c t e r i z e d in that the applications program modules of the external devices (14) can be deleted and replaced by new applications program modules specific for the customer by reprogramming free modules.

22. Mobile station according to claims 12-21, c h a r a c t e r i z e d in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

FIG.1

MS — 10

MP — 12

GPS — 14

16

FIG.2

10

16

GPS — 14

18

I/O   CPU

A/D   VOC

20

RADIO
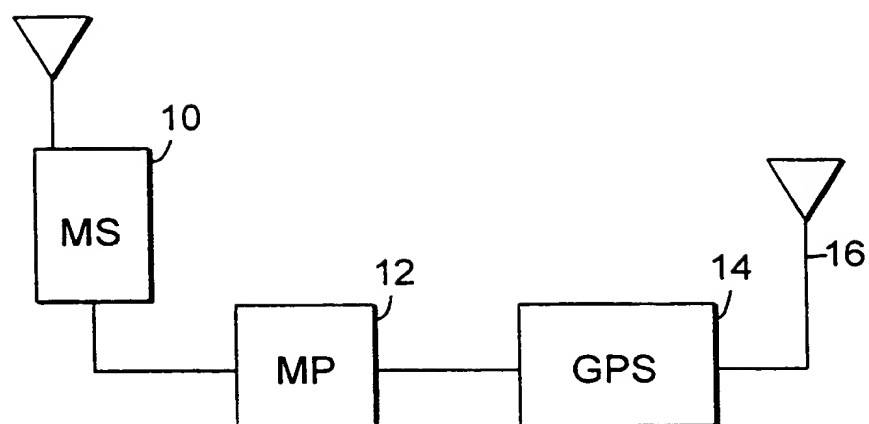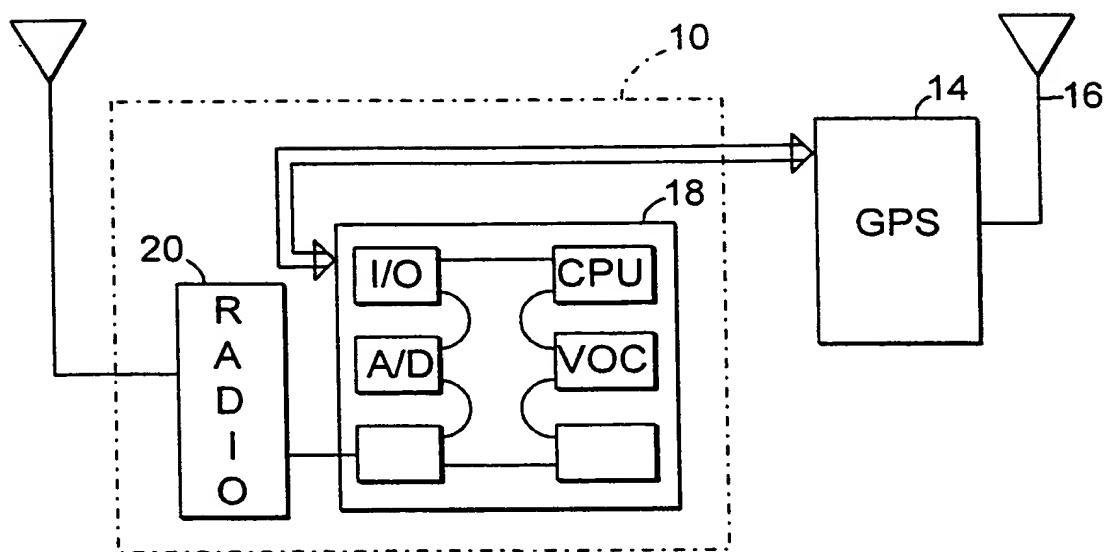
INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2289555 A (NOKIA MOBILE PHONES LTD.), 22 November 1995 (22.11.95), abstract	1-22
A	EP 0398056 A1 (NOKIA MOBILE PHONES LTD.), 22 November 1990 (22.11.90), abstract	1-22

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

Date of the actual completion of the international search	Date of mailing of the international search report
9 August 2000	2 4 -08- 2000

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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